

REMARKS/ARGUMENTS

The above-identified patent application has been reviewed in light of the Examiner's Action dated July 6, 2007. Claims 1, 13, 14, 15 and 20 have been amended without intending to abandon or to dedicate to the public any patentable subject matter. No claims have been canceled. Accordingly, Claims 1-23 are now pending. As set forth herein, reconsideration and withdrawal of the objections to and rejections of the claims are respectfully requested.

The title stands objected to on the grounds that it is not descriptive. Applicant does not agree with this characterization. However, in order to expedite prosecution of this matter, the title has been amended. It is submitted that the objection to the title should be reconsidered and withdrawn.

Claim 1 stands objected to for reciting "a computational component." In the amendment set forth above, the preamble of Claim 1 has been revised. As a result of the amendment, the claims dependent from Claim 1 are no longer in a different statutory category. Accordingly, it is submitted that the objection to Claim 1 should be reconsidered and withdrawn.

Claims 1-13 stand rejected under 35 U.S.C. §101 as being directed to nonstatutory subject matter. In the amendment set forth above, Claim 1 has been amended to clarify that it is directed to a process. In addition, dependent Claims 13 and 14 have been amended to be consistent with Claim 1. In view of these amendments, it is submitted that the rejections of Claims 1-13 as being directed to nonstatutory subject matter should be reconsidered and withdrawn.

Claims 1-6, 9-12 and 14-23 stand rejected under 35 U.S.C. §102 as being anticipated by U.S. Patent No. 5,327,490 to Cave. In addition, Claims 7, 8 and 13 stand rejected under 35 U.S.C. §103 as being obvious over Cave in view of U.S. Patent No. 5,570,419 to Cave et al. ("Cave '419") and further in view of U.S. Patent Application Publication No. 2003-0018762 to Mullen ("Mullen"). In order for a rejection under 35 U.S.C. §102 to be proper, each and every element as set forth in a claim must be found, either expressly or inherently described, in a single prior art reference. (MPEP §2131.) In order to establish a *prima facie* case of obviousness under §103, there must be some suggestion or motivation to modify the reference or to combine the reference teachings, there must be a reasonable expectation of success, and the prior art reference

or references must teach or suggest all the claim limitations. (MPEP §2143.) However, all of the claim elements cannot be found in the cited references, whether those references are considered alone or in combination. In particular, the cited references do not teach, suggest or describe calculating first and second different probabilities related to the availability of a first resource in connection with forecasting the future availability of that resource. Accordingly, reconsideration and withdrawal of the rejections of the claims as anticipated by or obvious in view of the cited references are respectfully requested.

The present invention is generally directed to forecasting the future availability of a resource or agent for a new work assignment. More particularly, the probability of completing a task that can be broken into a number of differentiated segments is determined by determining the probabilities with respect to each of the differentiated segments. For example, and without limitation of the broader claims, an agent in a call center may be assigned to complete tasks that can be broken into a first segment related to time during which the agent is speaking with a customer or other party ("talk time") and a second segment during which the agent is performing paper work following an instance of talk time ("wrap-up time"). Probabilities for each of these segments are then calculated separately. After the probabilities of the separate segments included in the task have been calculated, the probabilities are combined to obtain a probability related to whether the agent will be available within the forecast horizon. The prior art references cited in the Office Action do not teach, suggest or describe segmenting a task into multiple segments and separately determining the probability that each segment will be completed within a forecast horizon, in connection with obtaining an overall probability that a resource will be available within that forecast time horizon.

The primary reference, U.S. 5,327,490 to Cave, is generally directed to a system and method for controlling call placement rate for telephone communication systems. Cave does discuss using statistical parameters in connection with controlling call placement rates. (Cave, abstract.) One of the statistical parameters that Cave states is pertinent is the average agent in use time. Cave defines the average agent in use time as the average time that each agent is connected to a call and unavailable to take new calls. According to Cave, this time is a

combination of the time an agent is connected to a called party as well as any wrap-up time after the call. (Cave, col. 4, line 67 to col.5, line 4.) Importantly, Cave does not teach, suggest or describe determining a probability with respect to an amount of time that an agent is connected to a called party and separately determining a probability with respect to the amount of time that the agent is engaged in wrap-up. Instead, Cave treats the average agent in use time as a single statistical parameter. Moreover, Cave does not discuss determining a probability with respect to agent activities. Instead, Cave is concerned with determining the average amount of time that an agent is in use. Necessarily, because Cave does not teach, suggest or describe determining for different segments of a single task different probabilities, that reference also does not teach, suggest or describe combining determined first and second probabilities. Therefore, the rejections of Claims 1-6, 9-12 and 14-23 as anticipated by Cave should be reconsidered and withdrawn.

The Cave '419 reference is cited by the Office Action in connection with disclosure of the use of weighted forecasts and variance computation. Although the Cave '419 reference does discuss the use of statistical parameters in connection with controlling the pacing of outgoing calls, there is no teaching, suggestion or description in that reference of separating a single task into segments, and then separately calculating a probability of completion for each of the different segments within a forecast time. Accordingly, the Cave '419 reference does not make up for the deficiencies in the disclosure of Cave with respect to the pending claims.

The Mullen reference is cited by the Office Action in connection with the use of a forecaster to compute variances and *a priori* probability of completion of servicing a call within a selected forecast horizon. Although Mullen does discuss determining a probability that an agent will complete servicing a presently assigned call within a specified horizon, that reference does not teach, suggest or describe separately determining a probability that different segments of a task will be completed within a forecast time horizon. Accordingly, the Mullen reference does not provide elements of the pending claims that are missing from either the Cave or the Cave '419 references. Therefore, the rejections of Claims 7, 8 and 13 as obvious should be reconsidered and withdrawn.

Accordingly, the following elements of the independent claims indicated by italicized text cannot be found in the cited references:

1. A method for forecasting availability of a resource for a work assignment comprising:
selecting a forecast horizon;
determining for a first segment of a first task a first probability related to an availability of at least a first resource within said forecast horizon;
determining for a second segment of said first task a second probability related to said availability of said at least a first resource within said forecast horizon, wherein said first and second probabilities are different from one another;
combining said determined first probability and said determined second probability; and
normalizing a result of said combining said determined first and second probabilities to obtain a probability of agent availability within said selected forecast horizon.

15. A method for forecasting arrivals of agents, comprising:
selecting a forecast horizon;
forecasting the number of agents available within said selected horizon, said forecasting including:
determining a probability of completion of talk state within the forecast horizon for each of a plurality of agents;
determining a probability of completion of wrap-up state within the forecast horizon for each of said plurality of agents assuming each is at the start of wrap-up;
for each of said plurality of agents, *combining said determined probability of completion of talk state and said determined probability of completion of wrap-up state* to obtain an agent arrival probability for each of said plurality of agents within said forecast horizon; and

combining said agent arrival probabilities for each of said plurality of agents to obtain a first forecast.

It should be noted that Claim 15 specifies that the first and second probabilities comprise a probability of completion of a talk state and a probability of completion of a wrap-up state, and that the calculation of such probabilities is not taught, suggested or described by the cited references.

20. A work distribution system, comprising:
- means for predicting a time to a next work item requiring an agent;
 - means for accessing a first agent work segment statistic;
 - means for accessing a second agent work segment statistic;
 - means for determining a first probability of completing said first agent work segment within said predicted time at an elapsed time in said first work segment by applying at least said first agent work segment statistic;*
 - means for determining a second probability of completing said second agent work segment within said predicted time at zero elapsed time in said second work segment by applying at least said second agent work segment statistic; and*
 - means for combining said first and second probabilities to obtain an agent arrival probability within said predicted time.*

It should be noted that Claim 20 specifies that the first probability is calculated at an elapsed time in the first work segment and that the second probability is calculated at zero elapsed time in the second work segment, and that such features are not taught, suggested or described by the cited references.

At least some of the dependent claims also recite additional patentable subject matter. For example, Claim 2 specifies that the first resource comprises a first agent, and that the first probability comprises a probability that the first agent will complete a talk state within the

selected horizon. Claim 2 further recites that the second probability comprises a probability that the first agent will complete a wrap-up state within the selected time horizon. There is no teaching, suggestion or description of separately determining probabilities for agent talk state and agent state as recited by Claim 2. Therefore, Claim 2 should be allowed for at least these additional reasons.

Claim 3 depends from Claim 2, and recites that the first probability is determined for the actual time the first agent has been in the talk state, and the second probability is determined for zero time in the wrap-up state. There is no teaching, suggestion or description of determining probabilities as recited by Claim 3 in the cited references. Therefore, Claim 3 should be allowed for at least these additional reasons.

Claim 4 recites that the first probability comprises a combination of a probability that the first agent will complete a talk state within the selected horizon and a probability that the first agent will complete a wrap-up state within the selected horizon, and wherein the second probability comprises a probability that the first agent will complete a total handle time state within the selected forecast horizon. There is no teaching, suggestion or description of determining probabilities as recited by Claim 4 in the cited references. Accordingly, Claim 4 should be allowed for at least additional reasons. Claims 5-8 are directed to particular operations performed in connection with determined probabilities. These particular operations are not present in the cited references. Accordingly, these claims should be allowed for at least these additional reasons.


Application No. 10/813,509

The application now appearing to be in form for allowance, early notification of same is respectfully requested. The Examiner is invited to contact the undersigned by telephone if doing so would be of assistance.

Respectfully submitted,

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